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SOURCE Ugol'.CONTRIBUTION OF COAL-CLEANING PLANTS TO THE USSR COAL INDUSTRY

[This report presents information on the development of coal-cleaning plants in the USSR coal industry, from two Ugol' articles by A. S. Kuz'mich and I. A. Ul'yanov, Deputy Ministers of the Coal Industry.

Numbers in parentheses refer to appended sources.]

During the period of the five-year plans, a new branch of the coal industry was created in the USSR: the mechanized cleaning, briquetting, and sorting of coal.(1) In prerevolutionary Russia the country actually did possess 12 coal-cleaning installations made by foreign firms. However, the capacity of individual installations was not over 50-100 tons per hour, with the exception of the Kadiyevka plant, which had a capacity of over 100 tons per hour, and the equipment of the plants and the technology of cleaning was comparatively simple since run-of-the-mine coal contained relatively little ash, particularly the small varieties below 3-4 millimeters in size.(2)

During the past 10 years, the productive capacity of cleaning plants increased almost four times. In 1940, only 19.4 percent of coking coal was subjected to mechanical cleaning, but in 1950 this figure had risen to 40 percent [source 2 says more than 80 percent] and in 1952 to 50 percent.(1)

From 1930 to 1940, very large coal-cleaning plants were constructed according to plans of Soviet specialists: the Kal'miusskaya TsOF (Tsentral'naya Obogatitel'naya Fabrika, Central Coal-Cleaning Plant and the Chumakovskaya TsOF in the Donbass, the Kaspandinskaya TsOF in Karaganda and a number of others with coke by-products plants (Yenakiyev, Gubakha, etc.). The capacity of one coal-briquetting and cleaning plant which was put in operation exceeded the total capacity of all briquetting installations of prerevolutionary Russia. USSR-made equipment, distinguished for its high productivity and increased effectiveness, is installed in all these plants. At present, all coking coal of such combines

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as the Kuzbassugol' Combine, [source 1 says the predominant part of Kuzbassugol' Combine coal] is subjected to mechanical cleaning, while before 1940 this combine did not possess a single coal-cleaning combine.(2) In addition to the Kuzbass, intensive work is being done in the Donbass and Karaganda with the aim of reducing the ash content of coal to be used for coking.(1)

In 1950 alone, about 2,500,000 tons of harmful admixtures were removed by mechanical methods from coal shipped by enterprises of the Ministry of the Coal Industry. Shipping this coal in its uncleaned state would have required about 2,000 additional railroad trains.

The ash content of coking coal shipped in the Fourth Five-Year Plan from coal-cleaning plants of the Ministry of the Coal Industry was decreased from 9.7 to 8.1 percent in the Donbass, from 8.5 to 8.0 percent in the Kuzbass, and from 11.2 to 10.9 percent in Karaganda. The improved quality of this coal has contributed to higher achievements in metallurgy.

The ash content of fuel coal shipped to enterprises of the Ministry of Electric Power Stations decreased in the Fourth Five-Year Plan from 17.10 percent (1945) to 15.9 percent (1950), while that of coal shipped to enterprises of the Ministry of Railways decreased correspondingly from 24.21 to 23.05 percent. This improved quality of fuel coal resulted in a decreased consumption of 5.6 percent by enterprises of the Ministry of Electric Power Stations and of 19.6 percent by enterprises of the Ministry of Railways.

In prerevolutionary Russia, coking coal in sizes below 3-4 millimeters was not cleaned; at present, all small sizes of coking coals are cleaned in Donbass plants.

Screening techniques have changed greatly in USSR coal-cleaning plants. Low-performance shaker screens have been replaced by high-speed BKG shaker screens and by VG and GUP vibration screens.

Flotation, a new process of cleaning small particles of coal, is being used widely on an industrial scale in enterprises of the coal and coke by-products industries. In 1953, flotation installations of the Donbass are processing several thousand tons of coal particles per day. Flotation has greatly decreased losses of high-grade coking coals and is spreading not only in the Donbass but in the Kuzbass and Karaganda.

During the Fifth Five-Year Plan, several of the largest flotation installations in the world will be put in operation in the eastern regions. In one TsOF in Karaganda alone, several tens of cells of highly productive flotation machines will start operating.

The average capacity of a flotation installation in the Donbass is about 40 tons per hour.

Almost all flotation reagents used in flotation installations of foreign countries and, until recently also in the USSR, are products of the coke by-products industry. These reagents contain a number of harmful substances; as a result, used water carried off from the flotation installations pollutes natural water reservoirs. Starting in 1951, flotation installations of the Ministry of the Coal Industry began to use reagents which did not contain harmful ingredients and in this way increased the efficiency of the flotation process and decreased its cost.

Soviet specialists are mastering a chemical-gravity method for removing ash and sulfur from coking coal. With the introduction of this method in industry, the sulfur content of coal will decrease sharply and supplies of coking coal will be increased.

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Another achievement in the development of USSR coal-cleaning techniques has been the mastery of a mechanical method for cleaning lignite. An installation for this purpose has been operating more than 2 years in the Sverdlovskugol' Combine and is cleaning high-ash coal from the Volchansk deposit.

Good results have been obtained at a coal-cleaning plant at Mine No 44-45 and Mine No 46-47 of the Kopeyskugol' Trust of the Chelyabinskugol' Combine. The conclusion may be drawn that the wet process of cleaning will produce a high-grade lignite concentrate. If the ash content of the original coal was 36-38 percent, that of the concentrate will be 18-20 percent.(2)

The directives of the 19th Party Congress provide for an increase of 2.7 times in coal-cleaning during the Fifth Five-Year Plan. The amount of coal processed in coal-cleaning plants is to increase 2.9 times, including 2.3 times for coking coal, 4.7 times for fuel coal, and 16 times for lignite.(1, 2)

SOURCES

1. Moscow, Ugol', No 1, 1953
2. Ibid., No 2, 1953

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